

# **ATTACHMENT V**

## **SIGNALING SYSTEM 7**

## APPENDIX -- SS7

This Appendix sets forth the terms and conditions under which Telco will provide Common Channel Signaling/Signaling System 7 (CCS/SS7) interconnection and services.

### Article 1 Definitions

Capitalized terms shall be defined as set forth below or as otherwise defined in this Agreement.

1. “A” Link: An access signaling link that connects SPs and/or SSPs to STPs.
2. “B” Link: A bridge signaling link that connects two (2) sets or pairs of STPs, not the STPs within a mated pair, but on the same hierarchical level.
3. Common Channel Signaling (CCS): A method of digitally transmitting call set-up and network control data over a special signaling network fully separate from the public switched telephone network facilities that carry the actual voice or data portion of the call. CCS carries addressed signaling messages for individual trunk circuits and/or database related services between Signaling Points (SS7 nodes) in the CCS network. The protocol used by the Parties shall be Signaling System 7 (SS7).
4. Common Channel Signaling Network (CCS Network, or SS7 Network): An out-of-band signaling network that utilizes SS7 signaling to provide call setup, call supervision, call completion and database access services.
5. Compatibility Testing: Certification testing performed by representatives of AWS and Telco to ensure proper interconnection of CCS network facilities for accurate transmission of system signals and messages. This is often referred to as TR-905 Compatibility Testing. This certification testing shall be performed in accordance with the following ANSI documents:
  - a) T1.234 Telecommunications - Signaling System Number 7 (SS7) - MTP Levels 2 and 3 Compatibility Testing (ATIS);
  - b) T1.235 Telecommunications - Signaling System Number 7 (SS7) - SCCP Class 0 Compatibility Testing (ATIS); and

- c) T1.236 Telecommunications - Signaling System Number 7 (SS7) - ISDN User Part Compatibility Testing (ATIS).
6. “D” Link: A diagonal link from one Party’s network to the other Party’s network.
  7. Integrated Services Digital Network User Part (ISUP): Provides for transfer of call set-up signaling information between signaling points.
  8. Message Transfer Part (MTP): Provides functions for basic routing of signaling messages between signaling points.
  9. On-net: Any company or telecommunications carrier that has an SS7 arrangement with Telco.
  10. Point Code (PC) or Signaling Point Code (SPC): An identifier code that identifies a Signaling Point in the CCS Network. The code is used either as a destination point code or as an originating point code and provides an address within the CCS Network that enables messages to be routed to signaling points. These codes are 24-bit binary numbers comprised of three (3) segments of three (3) digits each, identifying the network identification, the network cluster, and cluster member, respectively. These codes are represented digitally as AAA-AAA-AAA, where “AAA” represents a decimal number from 000 to 255.
  11. SS7 Interconnection Facility: A dedicated SS7 signaling link connection between one Party’s SPOI and the other Party’s STP for the exchange of SS7 messages. An SS7 Interconnection Facility includes a dedicated 56 kbps signaling connection between AWS’ SPOI and terminating in a port of Telco’s STP.
  12. SS7 Network Interconnection: A CCS Network interconnection facility between AWS and Telco using SS7 protocol that consists of subprotocols MTP, SCCP, ISUP and TCAP; or, the interconnection of AWS STPs and AWS tandem switching systems with Telco’s STPs. SS7 Network Interconnection provides connectivity that enables the transport and exchange of SS7 ISUP and SS7 TCAP messages (i) between one Party’s STP and the other Party’s SPOI, and (ii) between Telco’s STP and Interexchange Carriers directly connected to Telco’s SS7 network.
  13. Service: The service described in Article 2 of this Agreement.
  14. Service Area: The location of Telco’s STP pairs and their corresponding network coverage, as described in Attachment 1.

15. Service Control Point (SCP): A node in the CCS network that provides a database functionality.
16. Signal Transfer Point (STP): A specialized packet switch in the CCS network that is used to route SS7 protocol signaling messages between signaling nodes. An STP performs SS7 message routing and screening. STPs transfer signaling messages to other networks. For purposes of network survivability, STPs are deployed in pairs.
17. Signaling Connection Control Part (SCCP): Provides additional routing and management functions for transfer of messages other than call set-up between signaling points.
18. Signaling Link: An end-to-end high-capacity digital, data quality link (56 kbps) that transmits signaling information in the form of signaling messages from one network SS7 node to another in a CCS Network. The link type identifies the functionality of the signaling link sets. The link types associated with the Service are "A", "B", and "D" Links. Signaling Links provide physical interconnection between signaling points of another party and Telco STPs. This is also sometimes known as a Type S interface, which is a physical SS7 signaling link connection between AWS' network and Telco's network. The 'S' in Type S indicates that signaling information is passed via this interface. A Type S interface is used to exchange SS7 ISUP and SS7 TCAP messages to support the applications to be provided between networks.
19. Signaling Point (SP): A node in the CCS network that originates and/or receives signaling messages, or transfers signaling messages from one Signaling Link to another, or both.
20. Signaling Point of Interface (SPOI): The point, or gateway, at which Telco exchanges signaling information with AWS.
21. Service Switching Point (SSP): A signaling point (end office or tandem) equipped with SS7-capable software that can launch queries to databases and receive/interpret responses used to provide specific end user services.
22. Signaling System 7 (SS7): The protocol using the Common Channel Signaling Network. The SS7 protocol used by Telco is the American National Standards Institute (ANSI) standard protocol defined by Bellcore Generic Requirement, GR-246-CORE, defined by Bellcore requirements (GR-317-CORE, GR-394-CORE, GR-444-CORE, GR-606-CORE, GR-82-CORE, GR-905-CORE and various other documents) and defined by the Telco Technical Publication AIT-TR-OAT-000069.

23. Transactions Capabilities Application Part (TCAP) Messages: Provides for transfer of non-circuit related information between SPs.

## **Article 2**

### **Description of Service**

SS7 Network Interconnection is the interconnection of AWS STPs and switching systems with Telco's STPs. Signaling information is passed via this interface. This interconnection provides connectivity that enables the exchange of SS7 messages among Telco's switching systems and databases, AWS switching systems, and other third-party switching systems that are directly connected to the Telco SS7 network. The SS7 interface is used to exchange SS7 ISUP and SS7 TCAP Messages to support the applications and access to databases to be provided between the Parties' networks. SS7 Interconnection Service includes the screening of messages based on origination Point Code and SS7 service type, and the routing of messages by a Telco or AWS mated pair of STPs.

AWS may allow use of the services and facilities provided to AWS under this Appendix by its affiliate Teleport Communications Group, Inc. and any other AWS affiliates that are engaged in the provision of local services and in which AWS or its parent companies have a twenty percent (20%) or greater direct or indirect ownership. In no case, however, shall AWS (i) allow use of the services in conjunction with any interexchange service or (ii) allow interexchange traffic on the facilities.

## **Article 3**

### **Provision of Service**

1. Interconnection. At AWS' request, Telco shall provide SS7 Network Interconnection over an SS7 Interconnection Facility from AWS' SPOI to a Telco STP at the location designated in Attachment 1 to this Agreement. AWS shall utilize its own SPC when interconnecting its STP at the "A" or "B" Link level. AWS must order dedicated Signaling Links and arrange for the provisioning of those links.
  - a) "D" Link Interconnection. Interconnection of Telco's CCS Network to AWS' CCS Network via a "D" Link connection between AWS STPs and Telco STPs is over a dedicated 56 kbps channel. Connections between two (2) pairs of STPs will have at least four (4) connections; i.e., one (1) link from each individual STP to each individual STP.

- b) Local and IntraLATA. Interconnection shall include local and intraLATA call set-up signaling, allowing AWS to use the out-of-band trunk signaling provided by Telco's CCS/SS7 network to carry its calls on the local and intraLATA toll network.
  - c) Scope of Access. Interconnection shall include access to: (1) all switching systems served by a given STP which have been converted to SS7 signaling, including switching systems owned by other local service providers; (2) databases directly connected to a given STP, with the exception of 800/888 databases which can be accessed through any STP or which would require a separate agreement; and (3) other local service provider STPs. All interconnection access arrangements must be ordered in conjunction with the limitations and provisions specified under this agreement.
  - d) Privacy Indicators. AWS and Telco agree to populate and honor the privacy indicator associated with the CPN field in accordance with applicable federal and state regulations.
  - e) Pre-Order Meeting. AWS and Telco agree to conduct a pre-order meeting prior to the initial interconnection of the Parties SS7 networks or whenever major network rearrangements are anticipated to determine the Telco facility availability and the degree of diversity in both the Telco physical network and the AWS physical network from signaling point to signaling point for the link.
2. Dedicated Signaling Links. Dedicated Signaling Links provide physical access to Telco's signaling network. The links are fully dedicated to the use of AWS and provide the screening and routing usage for the Telco STP to which the link is connected. Dedicated signaling links are provided as a set of links connecting to a Telco mated pair of STPs. Dedicated Signaling Links are dedicated two-way digital data circuits that interconnect Telco's STP locations and the AWS Signaling Points at Signaling Point of Interface (SPOI) locations. Dedicated Signaling Links are available to AWS for their use in furnishing SS7-based services or applications to their end users or other users of SS7 signaling information.

Dedicated Signaling Links include the following elements:

- a) SS7 Link Cross Connect: The SS7 Link Cross Connect provides a DS-0A or DS1 connection and access point for testing in the Telco STP building. The cross connect connects the STP Port Termination to a STP Access Link.
- b) STP Port Termination: The STP Port Termination is the physical termination of the signaling link (i.e. 56 kilobit per second circuit) at a Telco STP. An STP Port Termination is used for each 56 kbps SS7 Link Cross Connect terminated at a Telco

STP. The STP Port Termination shall provide for the use of the Telco STP to which the port is connected.

- c) STP Access Link: The STP Access Link provides a 56 kilobit per second digital facility when AWS requires an interoffice facility to connect from the AWS Dedicated Transport or Entrance Facility to the STP building location.
- d) STP Access Connection: The STP Access Connection provides a 1.544 megabit per second digital facility when required to connect from the carrier's designated point of presence to the STP Access Link.

AWS shall provide the portion of the signaling link from the AWS premises within the LATA to the Telco STP location using a STP Access Link. AWS shall notify Telco that the facility contains a signaling link service. Multiple facilities provided by Telco will be identified so that Telco may maintain facility diversity between links and linksets that require diversity. AWS shall identify the DS1 or channel of a DS1 that will be used for the signaling link.

AWS shall identify to Telco the facility and channel to which the SS7 Link Cross Connect shall connect. If the facility does not terminate in the STP location Telco shall provide a STP Access Link. The STP Access Link will connect to the DS-0A Cross Connect at the STP location.

When AWS uses an alternative DS1 facility or arranges, or agrees to allow, a physical degree of diversity or performance that is not in accordance with the specifications of Bellcore, GR-905-CORE, AWS acknowledges that the performance and reliability of the SS7 protocol may be affected and the performance and reliability standards described in GR-905-CORE may be disqualified.

Dedicated Signaling Links are subject to Telco compatibility testing and certification requirements per the Network Operations Forum Reference Document, per Bellcore, GR-905-CORE and per Telco Technical Publication, AIT-TR-OAT-000069. First interconnections to the Telco signaling network per AWS and per signaling point type of equipment will require pre-ordering meetings to exchange information and schedule testing for certification by Telco.

3. Transport. SS7 Transport provides for the routing and screening of SS7 messages from a Telco pair of STPs (i.e. a mated pair) to another Telco pair of STPs. The screening of messages provides for AWS designation of signaling points associated with AWS and controls which messages may be allowed or not allowed by the Telco STP pairs. The

routing of messages provides for the transfer of a complete message between signaling links, and for a Global Title Translation (“GTT”) of the message address, if needed.

SS7 Transport provides routing of messages for all parts of the SS7 protocol including, for example, Message Transfer Part (MTP) messages, Integrated Services Digital Network User Part (ISDNUP or ISUP) messages, Signaling Connection and Control Part (SCCP) messages, and Transaction Capability Application Part (TCAP) messages.

SS7 Transport provides for screening and routing of signaling messages based on the SS7 protocol. These messages may support other applications and services such as, Easy Option/Call Control Option/Bellcore CLASS services, Toll Free Database services, Line Information Data Base (LIDB) Services, and Calling Name (CNAM) Database services. SS7 Transport will route messages to the global title address or to the signaling point code address of the message based on the translation information of Telco’s STP.

SS7 Transport provides screening and routing of messages that are generated by the action of the AWS signaling point, or messages that are generated by a signaling point connected via the AWS signaling point. SS7 Transport is limited to 750 octets/second between Telco pairs of STPs.

Alternatively, AWS may secure SS7 Interconnection from a commercial SS7 hub provider, in which case Telco will permit AWS to access the same databases as would have been accessible if AWS had connected directly to Telco’s CCS network, providing however, that the SS7 hub provider orders interconnection directly from Telco and connects locally within the LATA; otherwise, additional limitations and charges may apply. Under these circumstances, Telco may require AWS or the hub provider to furnish a Letter Of Agency (LOA) authorizing the other party to order services or incur charges. Telco will route messages via SCCP MTP routing, if applicable, or to the alias PC of the hub network provider’s point of connection gateway STP pair, to the signaling PC address based on the Global Title Translation (“GTT”) information of Telco’s STP. Telco will provide screening and routing of messages that are generated by the action of an AWS signaling point and messages that are generated by a signaling point connected via the AWS signaling point.

4. CCS Signaling. Telco will provide CCS Signaling to AWS, where and as available, to terminate a call and signaling transport, in conjunction with local, toll, and transit traffic. The Parties will cooperate on the exchange of TCAP messages to facilitate interoperability of CCS-based features between their respective networks, including intraLATA CLASS features and functions, to the extent each Party offers such features and functions to any or all other customers. CCS signaling parameters will be provided upon request (where available), including called party number, calling party number (CPN), originating line information, calling party category, charge number, ANI, and privacy indicator.



5. Communications Path. Upon AWS' request, Telco will provide to AWS those facilities and arrangements described herein, including SS7 Interconnection Facilities, that are necessary to establish the physical connection over a communications path that is separate from the message path for the interchange of signaling information. The exchange of signaling information may be between AWS and Telco or between AWS and a designated carrier via Telco STP(s).  
When AWS requires an STP Access Link, AWS and Telco shall jointly negotiate the degree of diversity provided among and between multiple dedicated signaling links. The degree of diversity in both the Telco network and the AWS network shall be exchanged. The negotiation shall consider the requirements of the SS7 standard protocol, the degree of diversity available in each network and the possible alternatives. If AWS requires a degree of diversity greater than is available in the Telco network, AWS shall submit a Special Request.
6. Updates for Global Title Translation. The Parties shall have the right to request intraLATA NPA/NXX range additions in near real time for SS7 applications not presently translated. Initial entries for new applications are manual and chargeable. There is no charge for intraLATA updates to existing applications (for example changes/ or additions of sub system or translation types for existing GTT's).
7. CNAM Queries. Telco will provide message routing (where available) for CNAM queries made by the AWS switches.
8. CPN Field. In conjunction with the establishment of an SS7 Interconnection, AWS and Telco agree to populate the CPN field within the SS7 protocol and to bilaterally pass these CPN fields in SS7 messages. The CPN will be delivered by both AWS and Telco in the ISUP call setup messages.
9. ISUP Message Transport Service. ISUP service allows AWS to utilize SS7 signaling to an SS7 capable interexchange carrier (IXC) for access service and other intraLATA interexchange services. Where Telco has a mated pair of STPs and has CCS/SS7 interconnection facilities to an IXC within the same LATA, for interexchange telecommunications services, Telco shall provide call set-up signaling between AWS and the IXC. AWS will provide the PCs of the IXCs for which it is providing call setup via Telco's SS7 signaling network, so that Telco screening and translation tables can be updated.

#### **Article 4**

#### **Responsibilities of The Parties**

1. Managing the Network. Telco is responsible for managing the network provided by Telco as part of the Service and applying protective controls that it can invoke as a result of occurrences including, but not limited to, failure or overload of Telco or AWS facilities due to natural disasters, mass calling or national security demands.
2. Global Title Translation. The Parties shall determine the Global Title Translation (“GTT”) and Translation Type route for messages routed to GTT that are associated with the Parties SPs. The Parties shall use ANSI-assigned Translation Types and generally agreed to Sub-System Numbers, unless the parties agree otherwise in writing.
3. STP Functions. Telco shall define regional functions and local functions of its STPs. Telco will route SS7 MTP/SCCP messages within the Telco signaling network and transport those messages to Telco’s On-net customers. The Parties will use reasonable efforts to attempt to ensure that the messages between AWS and Telco network elements are not assymmetrically routed.
4. STP Use. When AWS orders the use of the Telco STP, AWS shall specify the set of signaling links to be used
5. Message Routing. Telco shall route messages generated by AWS throughout the On-net Telco signaling network. The content of the messages is for the use of signaling points of origination and destination. Telco will not use any information within messages for any purpose not required by or related to the use of the Telco signaling network. Telco will not divulge any message or any part of messages generated by AWS to any other party, except as required to manage the Telco signaling network or as may be required by law.
6. Performance Standards. The Parties shall meet service performance standards as outlined in GR-905-CORE and AIT-TR-OAT-000069, except as otherwise provided herein. In the event that Telco provides under this contract special service arrangements associated with diversity or other arrangements that do not strictly adhere to GR-905-CORE and AIT-TR-OAT-000069, and are of non-compliance to the technical publications or not certified by Telco, the Parties will discuss and mutually acknowledge in advance that the service performance standards need not be met in the provision of the total service.
7. Provisioning. AWS shall provision the signaling links at the AWS premises and from the AWS premises to the Telco STP location in a diverse, reliable and technically acceptable manner to comply with the standard SS7 protocol, Bellcore GR-905-CORE and the Telco network.

8. Wholesale Construction. If AWS requires a greater degree of diversity than Telco provides in the existing network, a special facility or a special routing of services, AWS agrees to initiate a Wholesale Construction request and pay additional charges as Telco may reasonably determine.
9. Signaling Point Codes. Both Parties will identify for the other Party the SPC(s) associated with their set of links.
10. Subsystem Numbers. When routing messages are addressed to a Telco Subsystem Number (SSN), AWS shall use the Telco defined SSN designation.
11. Calling Party Number Parameter. AWS shall transfer Calling Party Number Parameter information unchanged, including the "privacy indicator" information, when ISUP Initial Address Messages are interchanged with the Telco signaling network.
12. Accuracy. AWS shall verify the accuracy of information concerning the services ordered by AWS.
13. Diversity. The Parties shall designate the level of diversity associated with each other's premises and mutually agree on that level of diversity in advance.
14. Annual Forecast. AWS shall furnish to Telco, at the time the SS7 Service is ordered and annually thereafter, to the best of their ability, an updated three (3) year forecast of usage of the SS7 Signaling network. The forecast shall include total annual volume and busy hour/busy month volume. Telco shall utilize the forecast in its own efforts to project further facility requirements. The Parties acknowledge that such forecasts are not binding nor will inaccurate forecasts be considered to constitute a breach of this agreement.
15. Volume Changes. AWS shall inform Telco in writing thirty (30) days in advance of any change in AWS' use of such SS7 Service which alters by ten (10%) percent or more for any thirty (30) day period the volume of signaling transactions by individual SS7 service that are planned by AWS to be forwarded to Telco's network. The Parties acknowledge that such volume changes are not binding nor will inaccurate forecasts be considered to constitute a breach of this agreement and will be provided to the best of their ability.

## **Article 5**

### **Technical Requirements**

1. Components Connected. SS7 Network Interconnection shall provide connectivity to components of the Telco SS7 Network, including:

- a) Telco tandem switching systems;
  - b) Telco databases;
  - c) Other third-party local or tandem switching systems, provided Telco is already interconnected, has an established signaling path, or AWS is willing to pay for the establishment of, such interconnections ; and
  - d) STP PCs and alias PCs within Signaling Paths.
2. Links. The connectivity provided by SS7 Network Interconnection shall fully support the intraLATA functions of Telco switching systems and databases and AWS or other third-party switching systems with “A”, “B”, or “D” Link access to the Telco SS7 Network. Limited support for interLATA functions will be available based upon the existing capabilities of Telco’s SS7 Network at the time of any request.
3. When traffic is routed based on dialed or translated digits between an AWS local switching system and a Telco or other third-party local switching system, either directly or via a Telco tandem switching system, the Telco SS7 network will convey via SS7 Network Interconnection the TCAP messages that are necessary to provide intraLATA call management services (Automatic Callback, Automatic Recall, and Screening List Editing) between the AWS local STPs and Telco or other third-party local switch. Support for interLATA call management services must be formally requested by AWS and will be limited to existing capabilities of Telco’s SS7 Network at the time of such request(s).
4. MTP Functions. SS7 Network Interconnection shall provide the following functions of the MTP as specified in ANSI T1.111 or Bellcore GR-905-CORE. This includes:
- a) Signaling Data Link functions, as specified in ANSI T1.111.2 or Bellcore GR-905-CORE;
  - b) Signaling Link functions, as specified in ANSI T1.111.3 or Bellcore GR-905-CORE; and
  - c) Signaling Network Management functions, as specified in ANSI T1.111.4 or Bellcore GR-905-CORE.
5. SCCP Connectionless Class 0 Functions. SS7 Network Interconnection shall provide functions of the SCCP necessary for Class 0 (basic connectionless) service, as specified in ANSI T1.112. In particular, this includes Global Title Translation and SCCP management procedures, as specified in ANSI T1.112.4 or Bellcore GR-1432-CORE. Where the

destination SP is a Telco switching system or database, or is another third-party local or tandem switching system directly connected to the Telco SS7 network, SS7 Network Interconnection shall include final GTT of messages to the destination and SCCP subsystem management of the destination. Where the destination Signaling Point is an AWS local or tandem switching system, SS7 Network Interconnection shall include intermediate GTT of messages to a gateway pair of AWS local STPs, and shall not include SCCP subsystem management of the destination.

6. ISDNUP Functions. SS7 Network Interconnection shall provide functions of the Integrated Services Digital Network User Part (ISDNUP), as specified in ANSI T1.113 or Bellcore GR-905-CORE.
7. TCAP Functions. SS7 Network Interconnection shall provide functions of the TCAP, as specified in ANSI T1.114 or Bellcore GR-1432-CORE.
8. OMAP Functions. If and when Internetwork MTP Routing Verification Test (MRVT) and SCCP Routing Verification Test (SRVT) become approved ANSI standards and available capabilities of the Parties STPs, SS7 Network Interconnection may include the provision of these OMAP functions.
9. Performance Standards. SS7 Network Interconnection shall be equal to or better than the following performance requirements:
  - a) MTP Performance, as specified in ANSI T1.111.6 or Bellcore GR-905-CORE;
  - b) SCCP Performance, as specified in ANSI T1.112.5 or Bellcore GR-905-CORE; and
  - c) ISDNUP Performance, as specified in ANSI T1.113.5 or Bellcore GR-905-CORE.

## **Article 6**

### **Interface Requirements**

1. Interconnection Options. Telco shall offer the following SS7 Network Interconnection options to connect AWS or AWS-designated local or tandem switching systems or STPs to the Telco SS7 network:
  - a) “A” Link interface from AWS switching systems;
  - b) “B” Link interface from AWS STPs; and

- c) “D” Link interface from AWS STPs.
2. Signaling Links. The SPOI for each link shall be located at a cross-connect element, such as a DSX-1, in the central office where the Telco STP is located. There shall be a DS1 or higher rate transport interface at each of the SPOIs. Each Signaling Link shall appear as a DS0 channel within the DS1 or higher rate interface. Telco may offer higher rate DS1 Signaling Links for interconnecting AWS local switching systems or STPs with AWS STPs once these become approved ANSI standards and are available capabilities of Telco STPs.
3. Intraoffice Diversity. Telco’s central office(s) shall provide intraoffice diversity between the SPOIs and the Telco STPs, so that no single failure of intraoffice facilities or equipment shall cause the failure of both B-links in a layer connecting to a Telco STPs.
4. Protocol Interface Requirements. SS7 Network Interconnection shall conform to the following specifications based on the services provided herein,:
- a) ANSI T1.110-1992 American National Standard Telecommunications - Signaling System Number 7 (SS7) - General Information or Bellcore GR-905-CORE;
  - b) ANSI T1.111-1992 American National Standard for Telecommunications - Signaling System Number 7 (SS7) - Message Transfer Part (MTP) or Bellcore GR-905-CORE;
  - c) ANSI T1.111A-1994 American National Standard for Telecommunications - Signaling System Number 7 (SS7) - Message Transfer Part (MTP) Supplement or Bellcore GR-905-CORE;
  - d) ANSI T1.112-1992 American National Standard for Telecommunications - Signaling System Number 7 (SS7) - Signaling Connection Control Part (SCCP) or Bellcore GR-905-CORE;
  - e) ANSI T1.113-1995 American National Standard for Telecommunications - Signaling System Number 7 (SS7) - Integrated Services Digital Network (ISDN) User Part or Bellcore GR-905-CORE;
  - f) ANSI T1.114-1992 American National Standard for Telecommunications - Signaling System Number 7 (SS7) - Transaction Capabilities Application Part (TCAP) or Bellcore GR-1432-CORE;
  - g) ANSI T1.115-1990 American National Standard for Telecommunications - Signaling System Number 7 (SS7) - Monitoring and Measurements for Networks or Bellcore GR-905-CORE;

- h) ANSI T1.116-1990 American National Standard for Telecommunications - Signaling System Number 7 (SS7) - Operations, Maintenance and Administration Part (OMAP) or Bellcore GR-905-CORE;
- i) Bellcore GR-905-CORE, Common Channel Signaling Network Interface Specification (CCSNIS) Supporting Network Interconnection, Message Transfer Part (MTP), and Integrated Services Digital Network User Part (ISDNUP);
- j) Bellcore GR-954-CORE, CCS Network Interface Specification (CCSNIS) Supporting Line Information Database (LIDB) Service;
- k) Bellcore GR-1428-CORE, CCS Network Interface Specification (CCSNIS) Supporting Toll Free Service;
- l) Bellcore GR-1429-CORE, CCS Network Interface Specification (CCSNIS) Supporting Call Management Services;
- m) Bellcore GR-1432-CORE, CCS Network Interface Specification (CCSNIS) Supporting Signaling Connection Control Part (SCCP) and Transaction Capabilities Application Part (TCAP);
- n) Bellcore GR-145-CORE, Compatibility Information for Interconnection of a Wireless Services Provider and a Local Exchange Carrier Network;
- o) Bellcore GR-246-CORE, Bellcore Specifications of Signaling System Number 7; and
- p) Telco Common Channel Signaling Network Interface Specifications, AIT-TR-OAT-000069, and any Supplement to GR-905-CORE.

## **Article 7 Provisioning**

AWS shall abide by the following ordering guidelines:

1. SS7 Transport. AWS shall submit an Access Service Request (ASR), to identify the set of links AWS will use and identify the service(s) associated with each SPC. AWS shall identify Signaling Point Code and Global Title Translation information that must be translated into the Telco STPs.

2. Dedicated Signaling Links. AWS shall submit an ASR to Telco's Wireless Interexchange Customer Service Center (ICSC). AWS shall identify the Telco STPs, the AWS premises, the circuit interconnection arrangement at the AWS Dedicated Transport location and the AWS signaling point. AWS shall identify Signaling Point Code and Global Title Translation information that must be translated in the Telco STPs.
3. Signaling Point Codes. AWS will provide Telco with each originating and destination PC to be used by Telco for screening and routing all SS7 signaling messages associated with transport of SS7 signaling messages through Telco STP. Such PCs shall be identified on a per-signaling service basis.
4. Signaling Point Code Addition. AWS shall submit an ASR. AWS shall identify the Telco STPs and the AWS signaling point code information that must be added or changed in the Telco STP translations. If more than one pair of Telco STPs are affected, AWS shall indicate translation route information.
5. Global Title Translation (GTT) Addition. AWS shall submit an ASR. AWS shall identify the Telco Global Title Translation information that must be added, deleted or changed in the Telco STP translations. If more than one pair of Telco STPs are affected, AWS shall indicate translation route information. Telco will initially provide to AWS the Telco network topology for each service requested by AWS such as CLASS and CNAM.
6. Service Rearrangement. SS7 Signaling Service Rearrangements shall be ordered utilizing the standard ASR process, or when required, through submission of a Special Request.

## **Article 8**

### **Testing and Acceptance**

Each Party shall conduct Level 2 and Level 3 Compatibility Testing within its network at the "A", "B" and "D" Link levels to ensure network reliability. AWS and Telco shall work together to conduct testing of Signaling Services and Facilities.

1. Signaling Services. The Parties shall test signaling services when routing gateway screening and Global Title tables are populated.
2. Facilities. The Parties shall conduct Level 1, Level 2, and Level 3 facilities testing.

When testing is complete, AWS shall notify Telco whether it accepts the signaling services and/or facilities provided under this Agreement.



## **Article 9**

### **Trouble Reporting and Maintenance**

Telco provides a Regional Service Center to serve as a single point of contact for AWS maintenance and trouble reporting. For problems or issues that may arise with respect to SS7 Interconnection and Service, Telco will make available to AWS an Interexchange Carrier Maintenance Center (ICMC) Contact. This contact shall be available on a 24x7x365 basis and can be reached at 1-800-709-4884 AWS will provide to Telco access to its Network Operations Center (NOC). This contact shall be available on a 24x7x365 basis and can be reached at 1-800-832-6662.

## **Article 10**

### **Backup SS7 Network Interconnection, Emergency, Disaster Rerouting and Recovery**

To the extent that a SS7 backup system becomes operational in the industry and performs within acceptable industry standards as to reliability and technical performance, the Parties agree that such may be considered for deployment under this Agreement, and they may negotiate an appropriate amendment.

## **Article 11**

### **Rate Elements**

1. The following rate elements apply to SS7 Service. Pricing is specified in Exhibit 1 to this Appendix.
2. There are three types of charges that apply for SS7 Access. They are recurring, usage and nonrecurring charges. Recurring and nonrecurring charges apply for each port that is established on a STP. Usage charges apply for each Initial Address Message (IAM) or TCAP (excluding LIDB Access Service, 800 Access Service TCAP messages and LNP Database Access Query TCAP messages) message that is switched by the local STP and transported to an **SBC-AMERITECH** end office or for each IAM and TCAP message that is switched by the local STP in a hubbing arrangement.
3. Nonrecurring charges apply for the establishment of Originating Point Codes (OPC) and Global Title Address (GTA) Translations. An OPC charge applies for each OPC established, as well as each OPC added or changed subsequent to the establishment of STP Access. The OPC charge applies on a per service basis. A GTA Translation

charge applies for each service or application (excluding LIDB Access Service and 800 Carrier-ID-Only Service) that utilizes TCAP messages. A GTA Translation charge also applies for each service (excluding LIDB Access Service and 800 Carrier-ID-Only Service) added or changed subsequent to the initial establishment of STP Access.

4. Signal Formulation

- 4.1 An IAM Formulation usage charge will be assessed for each IAM message formulated at the **SBC-AMERITECH** tandem for AWS to **SBC-AMERITECH** terminated calls. A TCAP Formulation usage charge will be assessed for each TCAP message formulated at the **SBC-AMERITECH** Tandem for AWS to **SBC-AMERITECH** Telco terminated calls.

5. Signal Transport

- 5.1 An IAM Signal Transport usage charge will also be assessed for each IAM message that is transported from the local STP to the **SBC-AMERITECH** end office for terminating traffic. A TCAP Signal Transport usage charge will be assessed for each TCAP message that is transported from the local STP to the **SBC-AMERITECH** end office (excluding LIDB and 800 Access Service).

6. Signal Switching

- 6.1 An IAM Signal Switching usage charge will be assessed for each IAM message that is switched by the local STP for each IAM message that is switched for direct routed terminating traffic. A TCAP Signal Switching usage charge will be assessed for each TCAP message that is switched by the local STP termination of non-call associated signaling messages (excluding LIDB and 800 Access Service).

7. Signal Tandem Switching

- 7.1 An IAM Signal Tandem Switching usage charge will be assessed for an IAM message that is switched by an **SBC-AMERITECH** STP and transported to an end office for tandem routed terminating traffic. When Signal Tandem Switching usage charges are assessed, Signal Switching and Signal Transport charges do not apply, except for SS7 Transport.

8. Service Rearrangement AWS shall pay charges for special rearrangement of the SS7 Service which are not specifically addressed pursuant to the Special Request process on an individual case basis ("ICB").

## **Article 12**

### **INTENTIONALLY LEFT BLANK**

## **Article 13**

### **Records**

The Parties shall keep adequate records of operations and transactions and will furnish to the other Party such information as may be reasonably required for the administration of SS7 Interconnection and Service, including but not limited to (1) provisioning requests, (2) trouble reports, (3) escalation responses, (4) billing information, (5) listing of all signaling PCs and CLLI codes of the Parties, and (6) Translation Type and subsystem utilized by the Parties within their network and specific to a signaling service.

## **Article 14**

### **Termination Procedures**

Termination Procedures. Upon termination of the Appendix – SS7, the Parties shall mutually agree upon a plan of transition for transferring the SS7 Network Interconnection and Service to another SS7 provider or carrier so that service interruptions and any other impact on AWS customers is minimized; provided, however, that upon AWS' request, Telco shall continue to provide SS7 Network Interconnection and Service to AWS under the terms and conditions of this Agreement while the Parties work together in good faith to negotiate a new agreement for the provision of SS7 Network Interconnection and Service.

## **Article 15**

### **Reciprocity**

To the extent that Telco desires to obtain and use the facilities and/or services described herein (or comparable SS7 facilities and/or services) on AWS' SS7 network, AWS shall provide such facilities and/or services on the same terms and conditions and at the same rates as are provided herein for the provision of Telco's SS7 facilities and/or services.



## **ATTACHMENT 1**

Telco's SS7 network is a two-level hierarchical network consisting of mated-pairs of Local STPs and mated pairs of Regional STPs. They are equipped to support ISDNUP signaling.

Telco STP locations will be provided to AWS, upon request to Telco's account manager assigned to AWS.

**EXHIBIT 1**WISCONSIN PRICING – WIRELESS

## STP PORT TERMINATION

Recurring Monthly	\$347.17
Non-Recurring	\$628.12

ORIGINATING POINT CODE TRANSLATION \$ 22.94

GLOBAL TITLE ADDRESS TRANSLATION \$ 12.33

## SIGNAL FORMULATION

Per IAM Message	\$0.000342
Per TCAP Message	\$0.000333

## SIGNAL TRANSPORT

Per IAM Message	\$0.000133
Per TCAP Message	\$0.000090

## SIGNAL SWITCHING

Per IAM Message	\$0.000184
Per TCAP Message	\$0.000152

## SIGNAL TANDEM SWITCHING

Per IAM Message	\$0.000458
-----------------	------------